

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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<b>Applicant:</b>	Jiang	<b>Art Unit:</b>	3766
<b>Serial No.:</b>	10/629,291	<b>Examiner:</b>	Gedeon, Brian T
<b>Filed:</b>	07/28/2003		
<b>Docket No.:</b>	A329-USA		
<b>For:</b>	Material and Methods of Forming Yttria-Stabilized Zirconia to Minimize Low-Temperature Degradation		

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**AMENDMENT**

Dear Sir:

In response to the Final Office Action of 12/07/2007, please amend the above-identified application as follows:

**INTRODUCTORY COMMENTS**

Applicants call the Examiner's attention to the fact that this Final action raises for the first time two new rejections under 35 USC 103(a). Applicants are thus placed in the untenable position of having to file a mandatory Request for Continued Examination [at great expense to the client-Applicants] or of having to abandon the application with absolutely no opportunity to reply to these new rejections. Neither alternative is fair to Applicants and this misapplication of the rules does not further the public benefit afforded by the grant of a patent monopoly. Applicants deserve an opportunity to reply to a new ground of rejection without paying an additional burdensome filing fee.

This Final Office action withdraws previous rejections based on Tsukuma under 35 USC 102(b); rejection under 35 USC 103(a) over Tsukuma in view of Jiang; and 35 USC 103(a) rejection over Tsukuma in view of Whitehurst.

Claims 1-3 and 5-28 are pending and all are rejected.

Claims 1-3 and 5-28 are rejected on new grounds under 35 USC 103(a) as being unpatentable over Tsukuma (US Pat No. 4,587,225) in view of Whitehurst (US Pat No. 6,735,475).

Claim 5 is objected to because of informalities. Applicant has amended the claim to make it depend on independent claim 1.

Claim 4 is cancelled.

### **CLAIMS**

Claim 5 is amended to depend on claim 1 instead of claim 4 since claim 4 had been previously withdrawn. Claim 4 is now cancelled.

### **DISCUSSION**

Claims 1-3 and 5-28 are rejected on new grounds under 35 USC 103(a) as being unpatentable over Tsukuma (US Pat No. 4,587,225) in view of Whitehurst (US Pat No. 6,735,475).

Claims 1, 10, 19, and 23 are independent method claims directed to a stabilized tetragonal zirconia polycrystal ceramic. Applicants' arguments are directed to these independent claims in recognition that when allowed, the dependent claims that derive therefrom are also allowable as further dependencies on allowable independent claims.

Tsukuma is not relevant prior art for several reasons that evolve from the teachings of Tsukuma being directed to a ceramic body that is partially comprised of zirconia and significant amounts of alumina, spinel, or mullite. Tsukuma details this summary of his teachings when stating, "From this finding, the inventors presumed that if alumina ( $\text{Al}_2\text{O}_3$ ), spinel ( $\text{MgAl}_2\text{O}_4$ ) or mullite ( $3\text{Al}_2\text{O}_3\cdot 2\text{SiO}_2$ ) having higher elastic modulus and strength is incorporated instead of part of zirconia of the cubic system, the strength will further be improved." [col 1, lines 38-42] Tsukuma teaches increasing mechanical strength of "zirconia type" sintered body by hot isostatic pressing (HIP or HIPping). Tsukuma further emphasizes that "...the sintered body of the present invention can be effectively used as a mechanical structural material for cutting tool, a die, a nozzle or a

bearing, especially in the field where especially high strength and durability are required.” [col 8, lines 40-47] Tsukuma does not teach or recognize the existence of the problem that Applicants address, namely the need for a long-lived, stabilized tetragonal zirconia polycrystal ceramic. Strength degradation of any sort to zirconia-type material is unknown generally and is clearly unknown to Tsukuma in particular in 1984. First, Tsukuma is teaching HIP formation of a different material than the TZP polycrystalline material improved by Applicants via their specific teachings. Second, there is no reason to believe that the materials taught by Tsukuma are subject to humidity-induced phase transformations and an accompanying strength loss.

Further the Examiner admits that Tsukuma does not teach an implantable hollow tube. Tsukuma does not teach that a hollow tube can be formed by his teachings. Tsukuma does not teach that the materials containing large amounts of impurities, namely alumina, spinel and mullite, are implantable or can be formed into a tube by any means.

Combining Tsukuma with Whitehurst does not cure these defects. Whitehurst teaches that the implantable stimulator may be composed of biocompatible materials, for instance, glass, ceramic, or other material that provides a hermetic package. [col 16, lines 1-4] There is no teaching of zirconia or of tetragonal zirconia polycrystal ceramic. A search of Whitehurst finds only one casual mention of the ceramic material for construction, which is referenced above. [ibid] This is not a teaching of the use of the TZP material and is not a teaching of the problem or of the solution taught by Applicants to the destructive humidity-induced phase change that has been solved by Applicants’ invention.

Neither Whitehurst nor Tsukuma are motivated to solve the zirconia degradation problem, lacking knowledge of the specific zirconia material, and neither demonstrates knowledge of the problem nor does either teach the TZP material and a healing HIP process as taught by Applicants.

In view of the foregoing, it is respectfully submitted that the pending claims 1-3 and 5-28 are allowable as amended and in the present application. Reexamination and allowance are respectfully requested.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California area telephone number (661) 702-6814 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted,

01/25/2008

Date

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